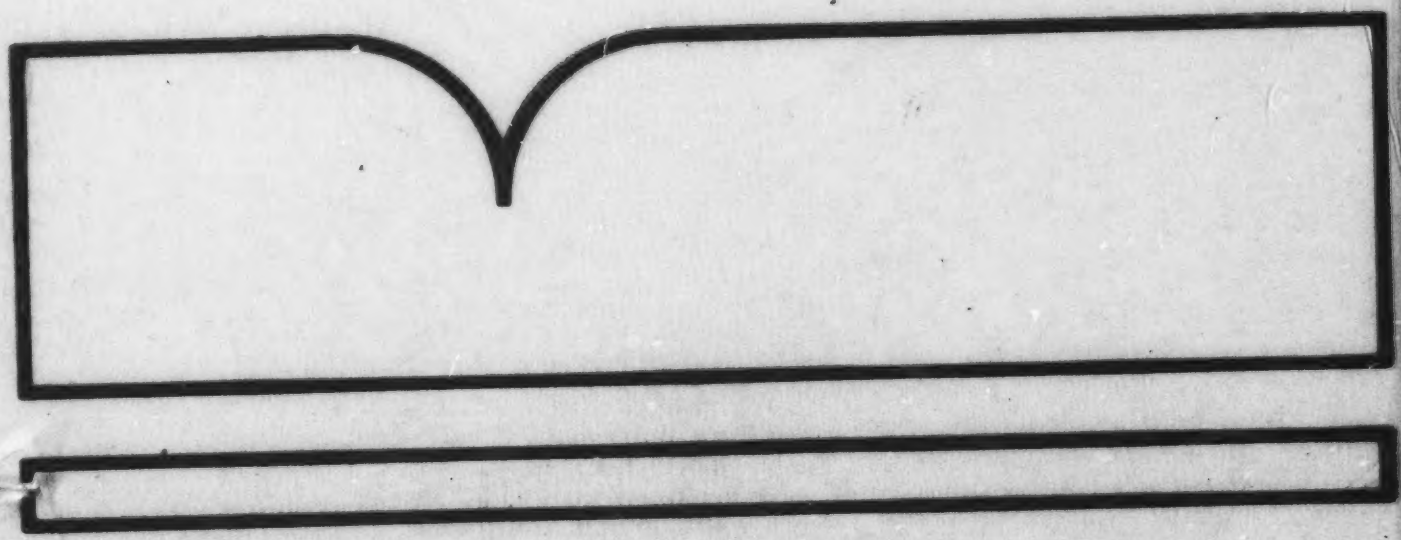
PB85-213890

Superfund Record of Decision (EPA Region 5) A and F Materials, Greenup site, Illinois (Initial Remedial Measure), November 1983

(U.S.) Environmental Protection Agency
Washington, DC

23 Nov 83



U.S. Department of Commerce
National Technical Information Service

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R05-83/001
November 1983

PB85-213890

EPA

Superfund Record of Decision:

A & F Materials-Greenup Site, IL (IRM)

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA/ROD/R05-83/001		PB85 213890 AS

4. TITLE AND SUBTITLE	5. REPORT DATE
SUPERFUND RECORD OF DECISION: A & F Materials - Greenup Site, IL	11/23/83
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Same as box 12.	10. PROGRAM ELEMENT NO.
	11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460	13. TYPE OF REPORT AND PERIOD COVERED Final ROD Report
	14. SPONSORING AGENCY CODE 800/00

15. SUPPLEMENTARY NOTES

16. ABSTRACT

The site, a defunct waste solvent reclaiming/processing facility, is located on three and three-quarters acres of land in Greenup, IL, and includes thirteen steel storage tanks containing mixtures of waste oils contaminated with PCBs and organics, sludges, spent caustics, spent acids, contaminated water and waste products. The tanks have a history of failure, creating a significant threat of hazardous substance release. In addition, the site includes four storage lagoons of contaminated sludge and soil which have a history of overflow problems. The site is underlain fy ten feet of silty material with a high permeability; beneath this silt layer lies a sand and gravel aquifer which has been contaminated. The site has a pronounced slope toward a river, is in a flood plain, and includes porous soil and high ground water table.

The cost-effective Initial Remedial Measure (IRM) selected for this site includes: off-site transportation and disposal of all contaminated bulk liquids, oils and drums at a RCRA-approved facility. Additional actions will include a cooperative agreement to conduct an RI/FS for soils, sludges and ground water contamination, and the preparation of another ROD to address remedial actions necessary to mitigate problems caused by the remaining contaminants. The capitol cost of the IRM is estimated to be $111,100.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision A&F Materials - Greenup, IL Contaminated media: gw, soil, tank wastes Key contaminants: oils, solvents, PCBs, chloronated organics, spent acids and caustics, metals, inorganics		

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report) None	21. NO. OF PAGES 16
	20. SECURITY CLASS (This page) None	22. PRICE $7.00

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

RECORD OF DECISION
Initial Remedial Measure

SITE: A&F Materials, Greenup, Illinois

ANALYSES REVIEWED:

I have reviewed the following documents describing the analysis of cost-effectiveness of remedial alternatives at the A&F Materials - Greenup site:

- Cost estimate for Remedial Action at A&F Materials, Final Report for Region V, U.S. EPA, GCA/Technology Division, May 1982,
- Evaluation of Initial Remedial Measures, EPA October, 1983.
- Staff summaries and recommendations.

DESCRIPTION OF SELECTED OPTION:

- Removal and off-site disposal of all contaminated liquids from tanks

- Removal and off-site disposal of all hazardous waste in drums

DECLARATIONS:

Consistent with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 CFR Part 300), I have consulted with the State of Illinois prior to determining the appropriate remedial action. I have determined that off-site disposal of the liquid contents of the tanks and the drums is a feasible and cost-effective remedial action necessary to limit a threat of exposure to a significant public health and environmental hazard. I have also determined that the action being taken is in balance with resources available in the Trust Fund and the need to respond at other sites. In addition the chosen remedy complies with section 101(24) of CERCLA because off-site disposal is more cost-effective than potential on-site actions.

Lee M. Thomas
Assistant Administrator
Office of Solid Waste and Emergency Response

11/23
Date

EVALUATION OF INITIAL REMEDIAL MEASURES

Site Name: A&F Materials

Site Location: Greenup, Illinois

I. Background

The A&F Materials site is located on three and three quarter acres of land on West Cumberland Street in Greenup, Illinois. Thirteen steel storage tanks contain a mixture of waste oils (contaminated with PCBs and organics), sludges, spent caustics, spent acids, contaminated water and other waste products and have failed on several occasions releasing their contents. The tanks have inadequate foundations and are presently tilted at about a 5 to 10 degree angle from vertical. The history of past tank failure and poor foundations to support the tanks is creating a significant threat of hazardous substances release. Multiple tank failure could result since the failure of one tank could cause the failure of adjacent tanks. Drainage from the site reaches the Embarras River by a ditch along the Illinois Central Railroad tracks. The site has a pronounced slope toward the Embarras River and is in the river floodplain. The City of Newton periodically withdraws drinking water from the Embarras River downstream of the site.

The site is underlain by 10 feet of silty material with a permeability of 3×10^{-5} cm/sec. The sand and gravel aquifer which has been contaminated, is located beneath this silt layer. The site is located on a hillside which discharges runoff from rainfall directly onto the hazardous substances.

Operations at the site began during the Spring of 1977 and were originally intended to reprocess waste oils and sludges from various generators. Four storage lagoons became filled by March 1978 and began to overflow, contaminating the environmental pathways leading to the Embarras River. Samples of sludge, oil, waste and water have been collected at the site on at least ten separate occasions by the State of Illinois and U.S. EPA between May 1978 and March 1983. Ground water monitoring wells which show PCB contamination were installed during August 1981. The contamination has been calculated to be moving toward the Embarras River at a velocity of over .25 ft/day. Polychlorinated biphenyls (33 ppm) have been found in the tanks. Other contaminants, have been found in significant concentrations in on-site soils and liquids including pyrene (23 ppm), flouranthene, (24 ppm), phenanthrene/anthracene (12 ppm), acenaphthlene (.4 ppm), napthalene (20 ppm), phenol (226 ppm), trichloroethylene (.32 ppm), toluene (3ppm), benzene (2.7 ppm), iron (4800 ppm), aluminum (11,000 ppm), cadmium (3 ppm), chromium (29 ppm), copper (140 ppm), lead (96 ppm), zinc (760 ppm) and dicyclopentadiene (1200 ppm). Although there is no specific data on other contents of tanks, in addition to PCBs, the contents are expected to include many of the materials found elsewhere on the site.

The site presently contains about 153,000 gallons of contaminated liquid waste, 16,000 gallons of contaminated oil, 800,000 gallons of contaminated sludge and soil, and 20 drums of unknown contents.

II. State Activities

An operating permit requiring no discharges from the site was issued by the Illinois Environmental Protection Agency (IEPA) on June 23, 1977. The IEPA has inspected the site on at least 20 separate occasions and continues to monitor conditions at the site. Administrative enforcement actions were initiated by the IEPA beginning in 1979, but resulted in little or no action by the site operators. Several lawsuits have subsequently been initiated by the State of Illinois, the Village of Greenup and residents of Greenup. On May 31, 1979, Village residents filed a Complaint in Circuit Court which resulted in a Temporary Injunction dated June 14, 1979, requiring that no additional wastes be accepted by A&F Materials. A portion of the facility was sold to Genet Refining and Recovery to apparently circumvent the court order, and the facility continued to operate. The Village of Greenup filed Complaints against A&F Materials and Ken Ault on June 10 and June 16, 1980, resulting in a Preliminary Injunction being issued on June 23, 1980. This injunction prevented wastes from being accepted at, or removed from the site without approval by the Village. The suit was joined by the State of Illinois and required removal of all wastes and restoration of the site. A default judgement was entered against Ken Ault and A&F Materials on October 21, 1981, requiring site cleanup. No wastes have been received at the site since June 1980.

III. Federal Response Activities

Based on the inspections conducted by IEPA and a detailed site investigation conducted by U.S. EPA in March 1980, Federal action was initiated in June 1980, pursuant to Section 311(c) of the Clean Water Act. Among the actions taken were the lowering of the level of wastes in the pits, diking, trenching, cleanup and removal of on-site and off-site wastes. About $240,000 was expended for site cleanup under Section 311.

In May and December 1982, expenditures of about $100,000 were required from the Fund for immediate removal actions to lower the level of waste in the lagoons. During March 1983, all of the liquid was removed from the lagoons and a temporary cap was placed on the consolidated sludges. This effort required an additional expenditure of approximately $190,000.

IV. Federal Enforcement

A Federal lawsuit to bring about site cleanup at Greenup was initiated by the filing of a Complaint on September 3, 1980, pursuant to authority under the Resource Conservation and Recovery Act, 42 U.S.C. Sections 6901, 6973, and the Clean Water Act, 33 U.S.C. Sections 1251, 1311, 1319 and 1321. The Complaint alleged that the handling, treatment, storage and disposal of solid and hazardous wastes at the facility presented an imminent and substantial endangerment to health and the environment. The Complaint also cited the defendants for violation of Section 311(e) of the CWA, as evidenced by overflows from the pits. The original Complaint did not include generators as defendants.

Letters to all known generators, dated November 3, 1981, were sent by the Assistant U.S. Attorney requesting their participation in site cleanup. Negotiations have continued since that time, but have failed to result in an agreement for site cleanup. Demand letters to the generators for the required remedial action were sent by the Department of Justice on August 18, 1982. No commitment by the generators has been made by the September 10, 1982, deadline provided in the Demand Letters. The generators were subsequently added to the lawsuit on February 14, 1983.

V. Evaluation of Alternatives

The following reports have been completed as part of the investigation of remedial action alternatives:

"Remedial Action Master Plan, A&F Materials," Weston, Inc., February, 1983.

"Cost Estimate for Remedial Action at A&F Materials, Final Report," GCA/Technology Division, May 1982.

"Ground Water Contamination Potential for the A&F Materials Site in Greenup, Illinois," E&E Inc., revised June 1982.

"Ground Water Contamination of the A&F Materials Site in Greenup, Illinois E&E Inc., revised June 1982.

"Meeting on Chemical Fixation Alternative for Sludge and Sediment Material at A&F Materials, Greenup, Illinois," Region V, U.S. EPA, August, 1982.

"Interim Status Report for the Hazardous Waste Sampling at Greenup/A&F Materials," E&E Inc., revised June 1982.

"Description of Greenup, Illinois, Facility of A&F Materials," Region V, U.S. EPA, January 5, 1982,

"The A&F Materials, Greenup, Illinois, On-Scene Coordinators Report," Region V, U.S. EPA, May 1982,

"The A&F Materials, Greenup, Illinois, On-Scene Reports," Region V, U.S. EPA, 1980,

The GCA report evaluated remedial alternatives to deal with the site conditions that existed prior to the immediate removal actions. This analysis evaluated six alternatives to deal with lagoon and tank liquids, waste oil, sludge and contaminated soil, and final site closure.

Before the remedial action could be approved and implemented, the immediate removal actions described in section III were conducted. The wastes remaining on-site include about 153,000 gallons of contaminated liquids in tanks, 16,000 gallons of contaminated oils in tanks, 20 drums with unknown contents and 800,000 gallons of lagoon sludges and contaminated soils.

EPA screened the original GCA alternatives to evaluate the elements of each alternative that dealt with the remaining site contaminants in tanks and drums. The contaminated lagoon sludge and soils were not included since the State is evaluating alternatives for those wastes in their on-going RI/FS.

The cost-effective analysis is summarized below:

1. Organic Contaminated Liquids in Tanks: The only technologically feasible alternatives for handling contaminated liquids were on-site treatment with activated carbon adsorption and off-site transport and disposal at an approved treatment facility. On-site solidification of liquids contaminated with organics has not been proven reliable. The site hydrogeology which consists of porous soils and high ground water (10 feet or less below the surface) makes landfilling of waste material unacceptable. The estimated cost for the two feasible alternatives are:

Liquid Disposal	Estimated Cost
On-site treatment	$128,500
Off-site treatment at a RCRA approved facility	$ 63,000

Therefore off-site disposal is considered the cost-effective action for dealing with contaminated liquids.

2. Contaminated Oils in Tanks: On-site treatment alternatives for contaminated oil, such as incineration or solidification were not cost-effective. On-site incineration of the relatively small volume of oil would require an extremely large capital cost for incinerator construction. EPA's mobile incinerator is currently undergoing RCRA permit approval; however the estimated cost for mobile incineration is $1 million making this option significantly more expensive than off-site disposal. Methods for solidification of organics and oils have not been proven reliable for long-term on-site disposal. The only feasible, reliable, and cost-effective alternative was off-site disposal at an approved facility.

3. Drums: The only technologically feasible and reliable method of dealing with the on-site drums was by transport and off-site disposal at an approved facility. The low number of drums (approximately 20) and the unknown contents made the cost of constructing and maintaining an on-site hazardous waste disposal facility prohibitive. In addition the hydrogeology of the site made landfilling unacceptable. Also the site is either in or adjacent to the Embarras River floodplain. The estimated cost for off-site disposal is $4,000.

VI. Community Involvement

In accordance with the Community Relations Plan which has been developed for the A&F Materials site, the RAMP, various reports on ground water contamination and a Fact Sheet was distributed to the community on August 11, 1983. The Fact Sheet (see Attachment 2) described the proposed Initial Remedial Measure and requested comments to be submitted by September 6, 1983. On September 1, 1983, a public meeting was held with the local residents in Greenup to describe the CERCLA program, provide a briefing on the site background and to discuss the proposed Initial Remedial Measure as well as the RI/FS being conducted by the State.

Questions and comments by the community provided at the meeting and in correspondence to the Region are summarized below.

Comment

Why not transport the entire tanks off the site with the liquids and sludge still in them?

Response

The storage tanks on the A&F site are not technically suitable for over-the-road use. They could not meet Department of Transportation regulations. They also. leak.

Comment

Will there be terrible odors, as occurred when the A&F site was operating? If so, are they toxic?

Response

There will be odors. The chemicals in the tanks give off a strong odor, but this odor does not necessarily indicate toxicity. Equipment will be utilized to minimize the release of vapors and air monitoring will be conducted to detect significant releases of contaminants during the tank pumping. The Center for Disease Control has reviewed the data on the tanks and believes the project can be completed without unacceptable releases of contaminants. The Center will be available to review the air monitoring data during the pumping.

Comment

Why not dismantle and get rid of the tanks now?

Response

The tanks contain contaminated sludge material which cannot be pumped. Once the liquids are removed the potential for releases of contamination to the environment are minimized. The sludge left in the tanks, as well as the tanks themselves, will be evaluated by the State as part of the RI/FS and can be handled along with the sludge left in the lagoons. Handling all of the sludge remaining at the site at the same time is more cost-effective.

In summary, the community concurs in the selected alternative for the Initial Remedial Measure; however, they feel the entire site surface should be cleaned up now rather than wait for the investigation to be completed.

VII. Recommended Alternative

The cost estimate breakdown for the recommended Initial Remedial Measure is as follows:

Task	Estimated Cost
- Prepare plans and specifications for Initial Remedial Measure	$ 8,400
- Off-site treatment and disposal of tank liquids and oils	$ 81,000
- Off-site disposal of drums	$ 4,000
- Contract management and supervision	$ 7,600
Subtotal	$101,000
10% Contingency	$ 10,100
Total	$111,100

Alternative technologies will also be considered for specific on-site wastes. For example off-site incineration of solvents and contaminated oils will be evaluated to determine if incineration cost would not significantly increase total disposal costs.

VIII. Additional Action

The State of Illinois has entered into a Cooperative Agreement with EPA to accomplish the following:

- Remedial Investigation/Feasibility Study for soils, sludges and ground water contamination
- Community Relations Program
- Project Management

U.S. EPA will take the lead in accomplishing the Initial Remedial Measure. The required State assurances for implementation of the Initial Remedial Measure have been incorporated as a special condition to the Cooperative Agreement. The following actions are necessary to implement the IRM:

- Enforcement release	OWPE/OEC	October 24, 1983
- Approve proposed remedy	AA OSWER	October 31, 1983
- Approve procurement request	AA OSWER	October 31, 1983
- Design/Implement IRM	EPA/REM/FIT	Nov 1983-Jan 1984

Another Record of Decision will be prepared following completion of the State's RI/FS. That decision will address remedial actions necessary to mitigate problems caused by the remaining soils and sludges, and contaminated ground water.

IX. RCRA Coordination

The proposed Initial Remedial Measure will not require on-site treatment, storage, and disposal of hazardous wastes. Therefore, there are no issues involving the consistency of on-site actions with RCRA. Off-site disposal of wastes will be in accordance with the appropriate RCRA regulations for the transportation and disposal of hazardous wastes. This will include manifesting of wastes and shipment to a RCRA approved facility.

Illinois
Environmental
Protection Agency

9.

2200 Churchill Road
Springfield, Illinois 62706

September 1983

Superfund Program

A & F Materials/ Greenup

Fact Sheet #1

Cleaning Up an Illegal Hazardous Waste Site

Background

A & F Materials, Inc. operated as a waste solvent reclaiming/processing facility between 1977 and 1980. When the site was operating, waste materials were transported to the site by truck, temporarily stored in unlined lagoons, and processed in the building at the site. By-products were stored in above ground storage tanks. Liquid alum, No. 2.5 fuel oil and fire retardant chemicals were produced for resale.

Greenup residents complained to the Illinois Environmental Protection Agency (IEPA) about the A & F Materials operations as early as March 1977. IEPA inspectors verified permit violations and the discharge of contaminated water into the flood plain of the Embarras River.

In the spring of 1979 city residents filed a complaint in circuit court. A temporary injunction was issued requiring A & F Materials to cease reclaiming operations. Waste liquids continued to be delivered to the site even though the lagoons were full. A year later another injunction was issued closing down all operations and ordering all deliveries and discharges to stop.

The problem

Storage ponds at the A & F site were filled by March 1978 and had begun to overflow. During 1979 hundreds of thousands of gallons of waste oil sludge contaminated the flood plain during flood stages of the river. Thereafter the lagoons continued to overflow and contaminate the area.

What has been done about the problem?

There were five emergency remedial actions at the site between June 1980 and March 1983. Oil spills have been cleaned up, berms have been repaired and raised, and wastewater treated and discharged. In March 1983 the sludge in the lagoons was consolidated and the lagoons covered to prevent any further overflow.

Since 1978 U.S. EPA has hired independent contractors to sample the soil, sludge and water on and around the site. After analyzing these samples and assessing the potential for continued discharge into the surrounding environment, U.S. EPA listed the site on the Superfund national priority list.

What kinds of hazardous waste have been found at the site?

The lagoons have contained a mixture of waste oils, sludges, spent caustics, spent acids and contaminated water, along with waste products. Polychlorinated biphenyl (PCBs) are also present. In addition, U.S. EPA and IEPA analyses have identified significant levels of heavy metals and dicyclopentadiene, toluene, xylene, naphthalene, styrene and benzene. These solvents were mixed with the waste oil when delivered to the reprocessing plant. The storage tanks contain similar waste material.

Is the water safe to drink?

Drinking water for the city of Greenup is provided by wells across the Embarras River from the A & F Materials site and they are not polluted. No private wells used for drinking water are contaminated either.

The primary source of water for the city of Newton is deep wells. They are not contaminated, but Newton does withdraw drinking water from the Embarras River in emergencies or during periods of drought, four to six days each year. Low levels of contaminants have been found in the river.

But is any of the drinking water threatened?

The contamination at the A & F Materials site could spread into the surrounding area by movement of either surface water or groundwater. To help prevent this, the sludge in the lagoons is protected from surface water runoff by plastic covers. Monitoring wells were installed to detect the direction and speed that contaminants move in underground water. Any change in groundwater contamination is detected by analyzing samples from monitoring wells.

What is going to be done next?

U.S. EPA has determined that the liquid in the aboveground storage tanks should be removed. A qualified contractor will be selected to drain the tanks and transport the

(Continued on back)

10

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: SEP 2 4 1982

SUBJECT: Meeting on Chemical Fixation Alternative for Sludge and Sediment Material at A&F Materials, Greenup, Illinois

FROM: Norman Niedergang
On-Scene Coordinator

TO: File

A meeting was held in Chicago, Illinois on August 5, 1982 to discuss the subject. A list of attendees is attached. Dr. Philip Malone and Dr. Larry Jones are authors of USEPA Publication No. 5W-872, entitled, "Guide to the Disposal of Chemically Stabilized and Solidified Waste," dated September 1980. Robert Cibulskis is a member of USEPA's Emergency Response Team.

Prior to the meeting Drs. Malone and Jones and Mr. Cibulskis reviewed the following document, as well as numerous photographs of the sites.

a. Description of Greenup, Illinois Facility of A&F Materials, USEPA, Region V, January 5, 1982 (includes summary of all analytical data).

b. Description of Olney, Illinois Facility of A&F Materials, USEPA, Region V, January 5, 1982 (includes summary of all analytical data).

c. Closure Plan - Waste Oil Surface Impoundment, Aluminum Company of America, Davenport Works, March 1, 1982.

d. Topographic map of Greenup Site, prepared by E&E Inc., March 1982.

In addition, the following description of the Greenup site conditions was provided:

a. The Greenup site is partially located within the 100-year floodplain of the Embarras River,

b. The site is underlain by 10 feet of clay-silt with a permeability of 3×10^{-5} cm/sec; the sand and gravel aquifer which has been contaminated, is located beneath the clay-silt layer,

c. The facility is located on a hillside which discharges rainfall-runoff directly onto the site,

d. The sludge is characterized as an oily, organic, spongy material.

Based on a review of the above information, Drs. Malone and Jones concluded the following:

a. Poor site conditions, in general, are an adequate basis to exclude on-site chemical fixation with on-site ultimate disposal. The site conditions existing at the Greenup site are not appropriate for further consideration of on-site fixation and disposal of the contaminated sludge and sediment materials.

b. Only two known firms in the country are experimenting with processes to provide chemical fixation of organic sludges. No field demonstration of chemical fixation of organic sludges has been attempted.

c. The process used by Alcoa at Bettendorf, Iowa, on similar types of sludges, was not acceptable for several reasons:

   1. The fixative agent contained significant amounts of sulphur trioxide, which readily converts to sulphuric acid in the field, which would tend to mobilize contaminants,

   2. Phenols were found to be readily released from the solidified sludges,

   3. Quality control during the fixing process was probably inadequate, based on the information provided. Oils and moist organic materials were noted at the bottom of soil borings taken in the field of the fixed sludges, and

   4. The EP-Toxicity test is not an acceptable test as the sole indicator of the potential for release of contaminants from fixed material. Other tests such as the Maximum Possible Concentration Test and the Uniform Leaching Procedure should have been performed.

d. Chemical fixation, then transportation to an off-site disposal facility close to the site, may be a feasible cost-effective alternative.

Based on the above conclusions, on-site chemical fixation of the sludge and sediment materials at the Greenup site of A&F Materials is not considered to be a reliable alternative worthy of detailed laboratory studies and field experiments. Bob Cibulskis concurred in this assessment.

Attachment

ATTENDEES LIST

A&F Materials
Chemical Fixation Alternative
August 5, 1982

NAME	ORGANIZATION
Eileen Bloom	Attorney, USEPA, Region V
Norm Niedergang	OSC, USEPA, Region V
Philip G. Malone	U.S. Army Corps of Engineers, WES
Larry W. Jones	U.S. Army Corps of Engineers, WES
R. W. Cibulskis	USEPA/ERT, Edison, N.J.
Bill Busch	IEPA, Springfield, IL
R. E. Dieffenbach	USEPA, Chicago, IL
Robert Mueller	Attorney, IL Attorney General
Howard O. Chinn	Engineer, IL Attorney General
Tom Borecki	Engineer, IL Attorney General